Proposed Amended Rule 1130 – Graphic Arts

Working Group Meeting #2

July 29, 2026, 10:00 AM (PDT)

Join Zoom Meeting: https://aqmd.zoomgov.com/j/1653609495

Meeting ID: **165 360 9495**

Agenda

- Background
- pCBtF and t-BAc
- Rule 1130 Analysis
- Proposals and Next Steps

Background

South Coast Air Quality Management District

- Local air pollution control agency for Orange County and large portions of Los Angeles County, Riverside County, and San Bernardino County
  - Largest of the 35 local air agencies in California and in the U.S.
  - 10,743 square miles
  - ~17 million residents (45 percent of CA population)
- Responsibilities include:
  - Regulate emissions from stationary sources
  - Permit and inspect over 28,000 facilities
  - Administer over $100 million of incentive funding annually

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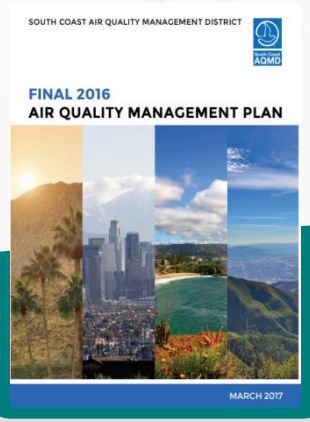
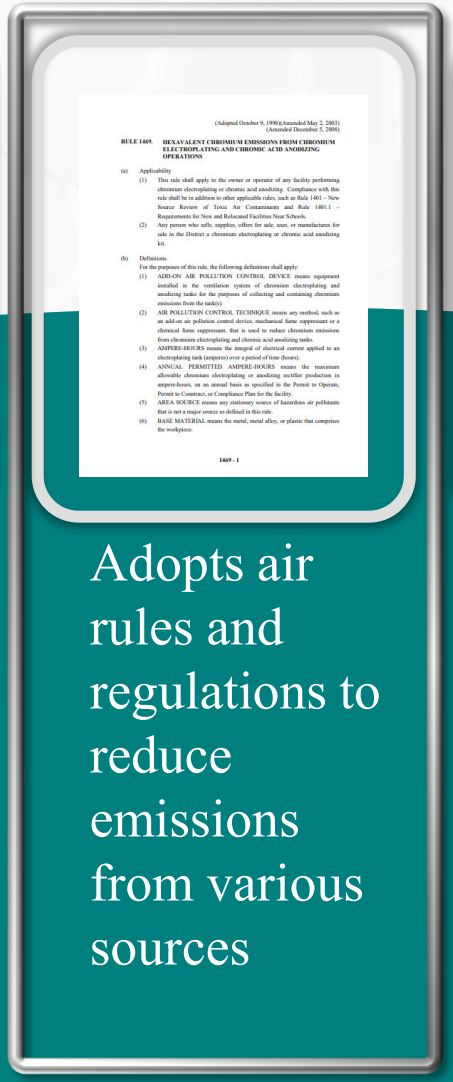
Key South Coast AQMD Activities

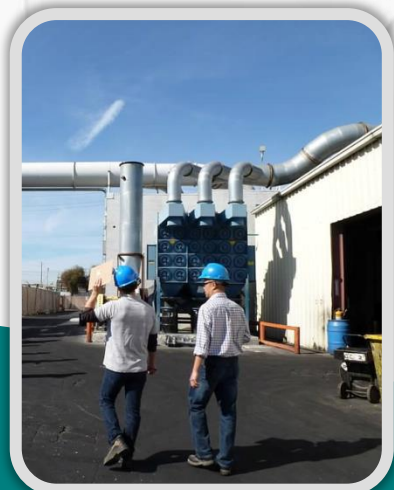


Develops the Air Quality Management Plan - blueprint for achieving compliance with federal and state clean air standards

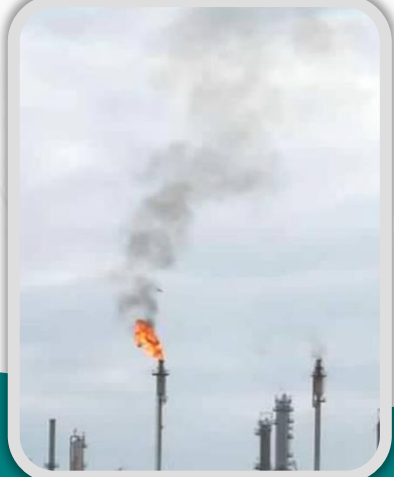


Adopts air rules and regulations to reduce emissions from various sources

Issues permits for equipment that limits the amount of air emissions to ensure compliance with air quality rules



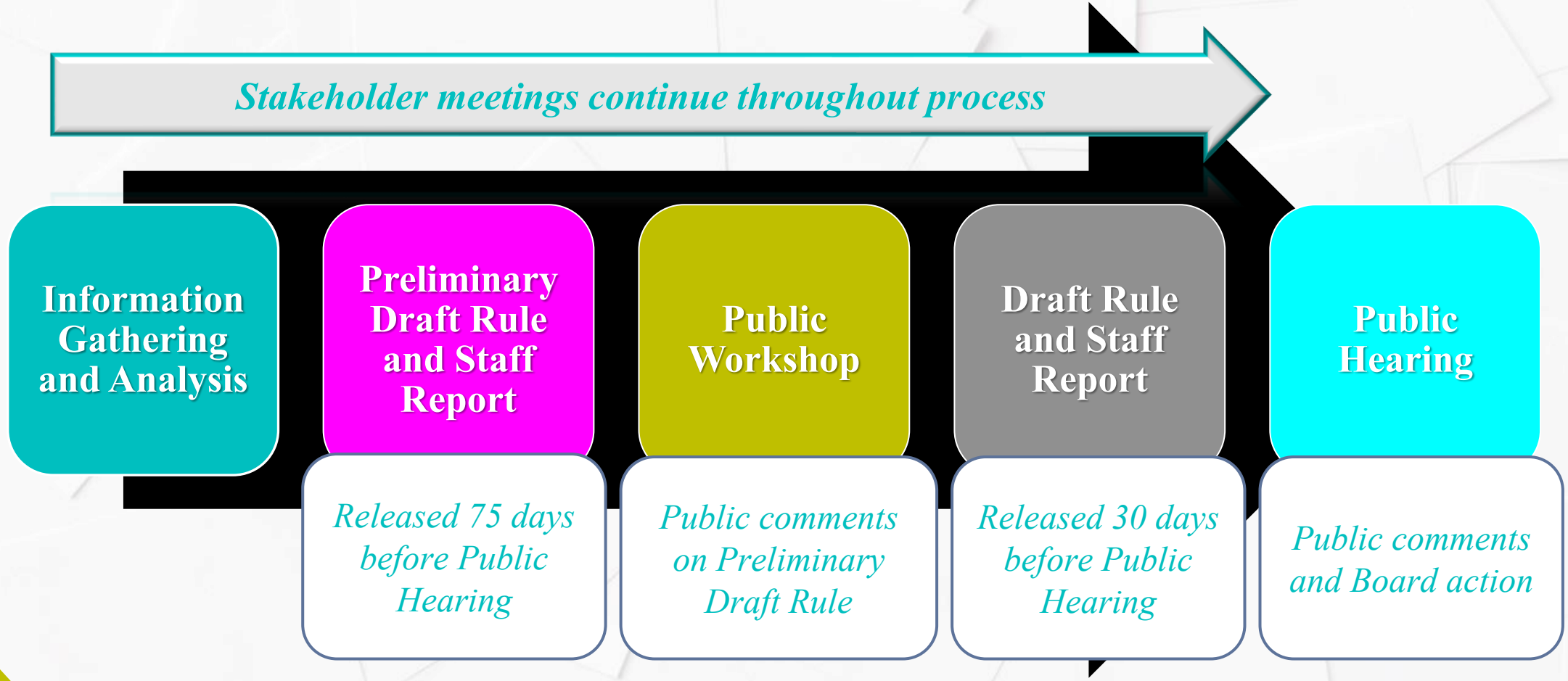
Conducts periodic inspections to ensure compliance with air quality requirements



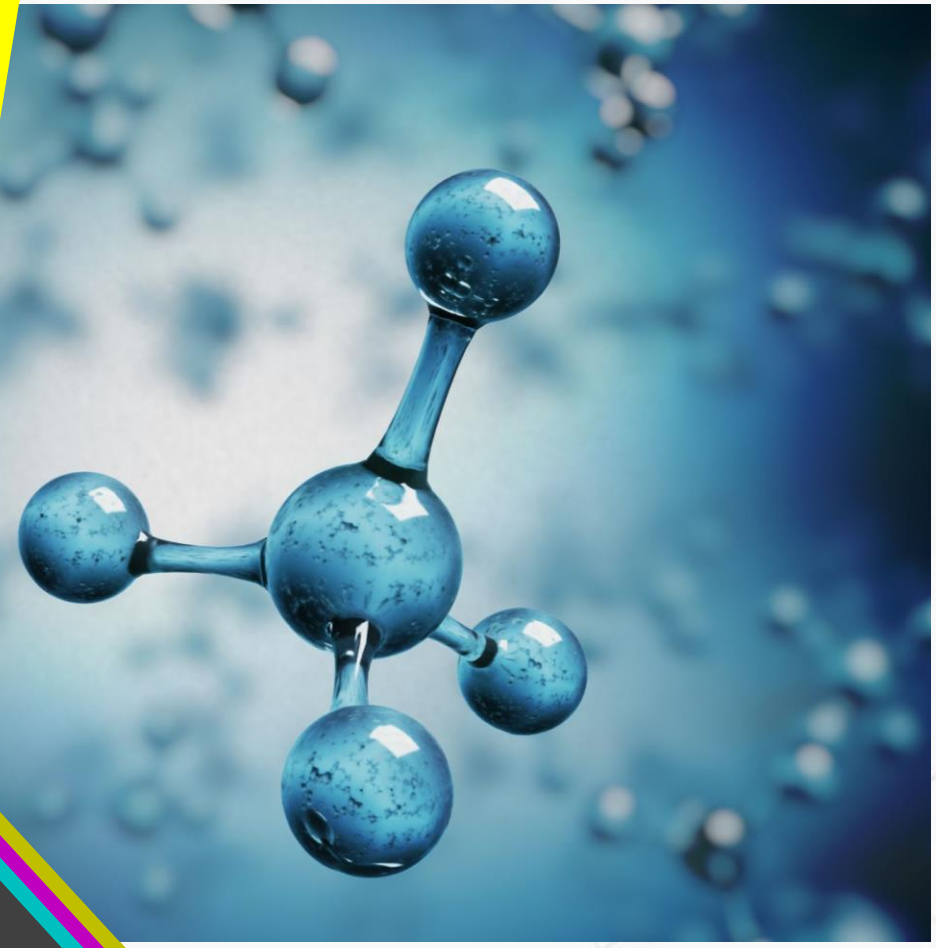
Responds to air quality complaints from the public

Conducts ambient air quality monitoring, including special studies

Overview of Rule Development Process



Volatile Organic Compounds (VOCs) Background



- Rule 1130 regulates VOC emissions
- VOC is defined in Rule 102 – Definition of Terms as any volatile compound made of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds
- Can be photochemically reactive and contribute to the formation of ground-level ozone (smog)

Exempt Compounds Background

- Certain solvents are defined as exempt from the definition of VOC by the U.S. EPA if they are negligibly photochemically reactive
  - Defined as less reactive than ethane
- Exempt compounds are not considered toward the VOC content of regulated materials
- U.S. EPA does not consider toxicity when making their designation
- Two exempt compounds of focus are parachlorobenzotrifluoride (pCBtF; CAS # 98-56-6) and *tert*-Butyl Acetate (t-BAc; CAS # 540-88-5)

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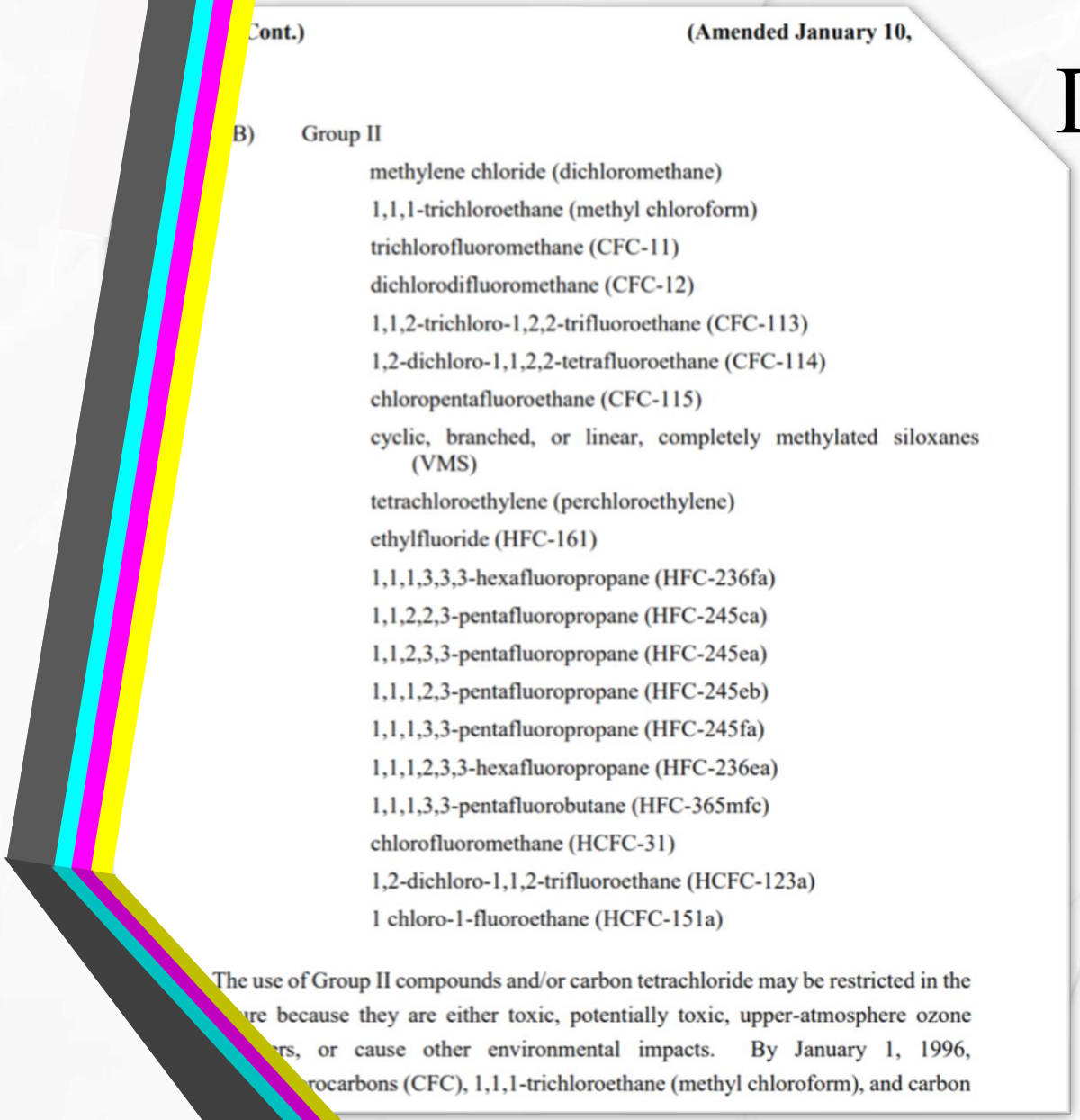

Cont.) (Amended January 10,

B) Group II

methylene chloride (dichloromethane)
1,1,1-trichloroethane (methyl chloroform)
trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113)
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)
cyclic, branched, or linear, completely methylated siloxanes (VMS)
tetrachloroethylene (perchloroethylene)
ethylfluoride (HFC-161)
1,1,1,3,3,3-hexafluoropropane (HFC-236fa)
1,1,2,2,3-pentafluoropropane (HFC-245ca)
1,1,2,3,3-pentafluoropropane (HFC-245ea)
1,1,1,2,3-pentafluoropropane (HFC-245eb)
1,1,1,3,3-pentafluoropropane (HFC-245fa)
1,1,1,2,3,3-hexafluoropropane (HFC-236ea)
1,1,1,3,3-pentafluorobutane (HFC-365mfc)
chlorofluoromethane (HCFC-31)
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)
1 chloro-1-fluoroethane (HCFC-151a)

The use of Group II compounds and/or carbon tetrachloride may be restricted in the ...re because they are either toxic, potentially toxic, upper-atmosphere ozone ...rs, or cause other environmental impacts. By January 1, 1996, ...rocarbons (CFC), 1,1,1-trichloroethane (methyl chloroform), and carbon

South Coast AQMD's Defined Exempt Compounds

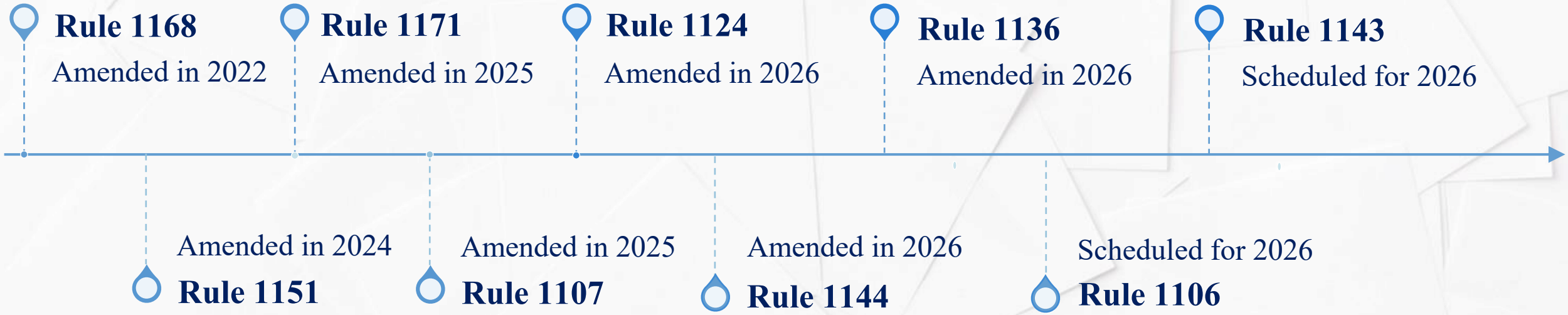
- Rule 102 breaks exempt compounds into two groups:
  - Group I: Exempt compounds that are not expected to be restricted in the future
  - Group II: Exempt compounds that are prohibited from use in many VOC rules due to toxicity, ozone depletion potential, or other environmental impacts
- South Coast AQMD sometimes includes limited exemptions to address potential toxicity concerns
  - For example, Rule 1113 – Architectural Coatings include limited exemptions for t-BAc

pCBtF and t-BAc

pCBtF and t-BAc Regulatory Background

1994 - 1995	U.S. EPA and South Coast AQMD exempted pCBtF due to low photochemical reactivity
2004 - 2006	U.S. EPA exempted t-BAc as a VOC, South Coast AQMD included limited exemptions
2015	Office of Environmental Health Hazard Assessment (OEHHA) draft assessment showed t-BAc as potential carcinogen
2017	South Coast AQMD Stationary Source Committee directed staff to prioritize lowering toxicity over emission reductions
2018	OEHHA finalized t-BAc Cancer Potency Factor, concluding poses potential cancer risk to humans, South Coast AQMD requested OEHHA evaluate toxicity of pCBtF
2020	OEHHA finalized pCBtF Inhalation Cancer Potency Factor, concluding pCBtF poses greater cancer risk to humans than t-BAc

Rule Amendments to Address pCBtF and t-BAc



- Rule 1168 – Adhesive and Sealant Applications
- Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations
- Rule 1171 – Solvent Cleaning Operations
- Rule 1107 – Coating of Metal Parts and Products
- Rule 1124 – Aerospace Assembly and Component Manufacturing Operations
- Rule 1144 – Metalworking Fluids and Direct-Contact Lubricants
- Rule 1136 – Wood Products Coatings
- Rule 1106 – Marine and Pleasure Craft Coatings
- Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents

Manufacturer Survey

- Staff distributed a manufacturer survey in August 2025 for a suite of rules to assess the extent of pCBtF and t-BAc use
- Survey results were expected mid-November

- **Rule 1106** – Marine and Pleasure Craft Coatings
- **Rule 1113** – Architectural Coatings
- **Rule 1122** – Solvent Degreasers
- **Rule 1125** – Metal Container, Closure, and Coil Coating Operations
- **Rule 1126** – Magnet Wire Coating Operations
- **Rule 1128** – Paper, Fabric, and Film Coating Operations
- **Rule 1130** – Graphic Arts
- **Rule 1130.1** – Screen Printing Operations
- **Rule 1143** – Consumer Paint Thinners & Multi-Purpose Solvents
- **Rule 1144** – Metalworking Fluids and Direct-Contact Lubricants
- **Rule 1145** – Plastic, Rubber, Leather, and Glass Coatings
- **Rule 1162** – Polyester Resin Operations

Additional information and documents from the rule development processes can be found on the South Coast AQMD website: *https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules*

Rule 1130 Analysis

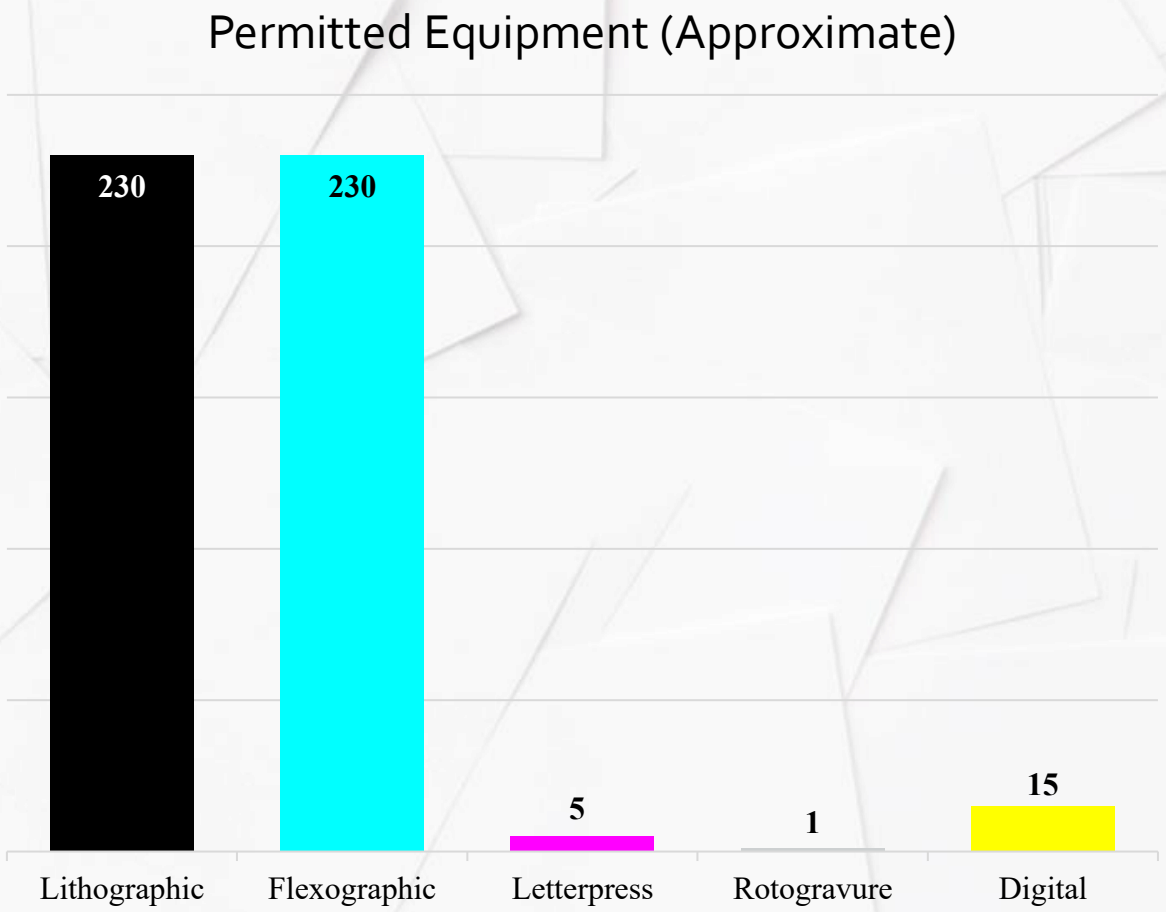
pCBtF and t-BAc in Rule 1130

- Staff received one survey result for Rule 1130 inks and coatings
  - Indicated no pCBtF or t-BAc
- Staff met with another manufacturer who stated none of their inks used either chemical
- Staff reviewed Safety Data Sheets of inks provided in permit applications, no pCBtF or t-BAc reported
- No indication pCBtF or t-BAc are used in Rule 1130 products

Equipment Universe and Emissions Inventory

Review of South Coast AQMD permits shows most presses are lithographic and flexographic

- Additional unpermitted presses exist but are difficult to quantify
- Emissions inventory of 0.75 tons per day based on estimates of permitted and area sources



VOC Limits

- Majority of inks and coatings comply with limits
  - High VOC inks limited to facilities with control equipment
- Many coatings and inks have much lower VOC than the limits, including zero VOC inks
- New flexographic equipment must use inks with a VOC content of 180 g/L to comply with Best Available Control Technology (BACT) requirements

VOC Limits (Current)

Category	VOC Limit (grams per liter)
Adhesives	150
Flexographic Ink on Porous Substrates	225
Matte Finish Inks	535*
Metallic Inks	460*
All other inks and coatings	300

*Higher limit only applicable to facilities which use less than 2 gallons per day and 125 gallons per year, and emit less than 10 tons per year of VOC

Digital Printers

- Large digital printers commonly used for printing
- Currently not regulated by any VOC rule
  - Permit required for printing equipment with large throughput
- More permitted digital printers than letterpress and rotogravure printers combined (15 vs 6 for letterpress and rotogravure)
- Digital ink VOCs range from 0 to 790 g/L based on permit applications

Consumer Printing Inks

- Not currently regulated by California Air Resource Board or South Coast AQMD
- Approximately 6 tons per day of inks, toners, ribbons, and cartridges sold in South Coast AQMD[1]
- VOC emissions from these products is unclear, potentially as high as 3 tons per day
- Could consider including VOC limits for consumer inks in either Rule 1130 or a new rule

[1]Based on CARB's 2015 Consumer and Commercial Product Survey, adjusted for population

Site Visit

- Visited local print shop on 7/9/2026
- Highlighted changes in industry, with smaller runs on a variety of different presses
- Digital printing included conventional inkjet and large format UV inkjet printers
- Inks used in both offset and digital printing had VOCs well under VOC limits, between 2 and 40 g/L

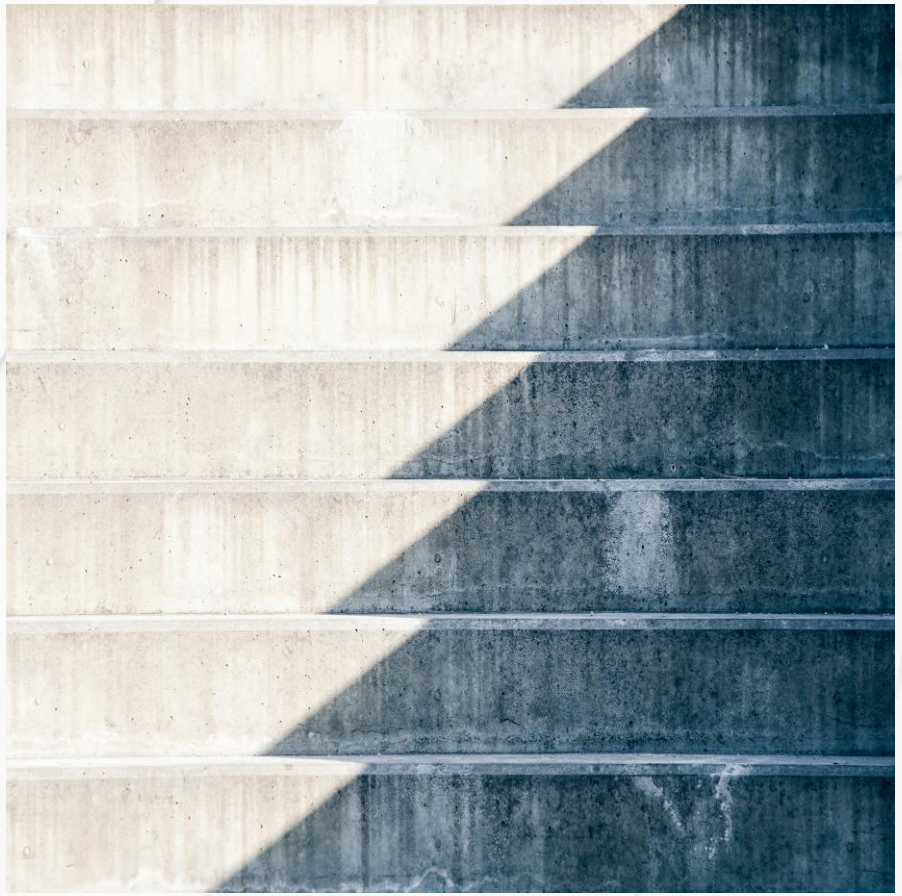
Proposals and Next Steps

Rule Concepts

- Prohibit use of pCBtF and t-BAc
  - Accelerated phase out due to little or no presence in industry
- Consider lowering all VOC limits to reflect current market VOC levels
- Consider including commercial digital printing in the Rule
- Consider regulating consumer digital printing

Next Steps

- Continue Site Visits and Meetings with Stakeholders
- Release Rule Language Q3/Q4 2026
- Public Hearing Q1 2027



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